

WHAT IS CLAIMED IS:

1. A data transmission apparatus in a wireless system comprising:
a Q-ary encoding unit to block-encode data to be transmitted;
a modulating unit to receive each Q-ary symbol from the Q-ary encoding unit,
the modulating unit to output modulated Q-ary symbols; and
an amplifying unit to amplify each modulated data to a target power for a
channel gain and output the amplified data.
2. The apparatus of claim 1, wherein the Q-ary encoding unit comprises:
a Q-ary block encoder to add a redundancy to an information sequence block
of data and map the data to a code sequence block;
an interleaver to interleave the mapped data symbol to prevent an error on a
channel; and
a serial-to-parallel converter to convert the interleaved serial Q-ary code
symbol into M-parallel bits and output the bits to the sub-channels.
3. The apparatus of claim 1, wherein the modulating unit modulates each Q-ary
symbol and outputs modulated Q-ary symbols.
4. The apparatus of claim 1, wherein the modulating unit includes a plurality of
modulators each corresponding to one of a plurality of sub-channels.

5. The apparatus of claim 1, wherein the amplifying unit amplifies data of each sub-channel up to the target power for a channel gain.
6. The apparatus of claim 1, wherein the amplifying unit includes a plurality of amplifiers each corresponding to one of a plurality of sub-channels.
7. A data transmitting method in a wireless system comprising:
comparing detected channel gains with a reference value to classify a corresponding channel as one of a 'GOOD' state and a 'BAD' state; and
controlling transmission power of the corresponding channel based on the classified state.
8. The method of claim 7, wherein the channel gain is obtained through one of: a feedback channel from a receiving end, sharing between channels, and estimated from a value detected in a previous data transmission.
9. The method of claim 7, wherein the channel is classified as the 'GOOD' state if channel gains of sub-channels are greater than or the same as a reference value.
10. The method of claim 7, wherein the channel is classified as the 'BAD' state if one of channel gains of the sub-channels is smaller than the reference value.

11. The method of claim 7, further comprising:
erasing a corresponding data symbol if a channel state is classified as the
'BAD' state.
12. The method of claim 7, wherein if a corresponding channel is in the 'BAD'
state, transmission power is controlled to be '0.'
13. The method of claim 7, wherein if a corresponding channel is in the 'GOOD'
state, the transmission power is controlled to be 'P'.
14. The method of claim 13, wherein 'P' is a constant or a function of a channel
gain and includes target receiving power that has been fed back from a receiving end.
15. A data receiving apparatus in a wireless system comprising:
a demodulating unit to demodulate a signal received by each sub-channel and
output a Q-ary symbol; and
a Q-ary decoding unit to perform a block decoding on a Q-ary symbol of each
sub-channel output from the demodulating unit.
16. The apparatus of claim 15, wherein the demodulating unit includes a plurality
of demodulators each corresponding to one of the sub-channels, the demodulators

demodulating signals received by each sub-channel to Q-ary symbols, and outputting the demodulated Q-ary symbols.

17. The apparatus of claim 15, wherein the Q-ary decoding unit comprises:

a parallel-to-serial converter to convert Q-ary symbols input in parallel bits corresponding to a number of sub-channels into serial bit Q-ary symbols and outputting the serial bit Q-ary symbols;

a deinterleaver to perform a deinterleaving on the Q-ary symbols; and

a Q-ary block decoder to restore transmission data from the deinterleaved data.

18. The apparatus of claim 17, wherein the Q-ary block decoder restores the transmission data by performing an erasure-error correction on the deinterleaved symbol data to restore transmission data

19. A data receiving method in a wireless system comprising:
- comparing channel gains of each sub-channel for transmission data with a reference value so as to classify the channels as one of 'GOOD' and 'BAD';
- storing data symbols according to the classification; and
- demodulating according to an erasure-error correction method so as to restore data.
20. The method of claim 19, wherein if all the channel gains of every sub-channel are equal to or greater than the reference value, the corresponding channel is classified as 'GOOD'.
21. The method of claim 19, wherein if one of the channel gains of the sub-channels is smaller than the reference value, the corresponding channel is classified as 'BAD'.
22. The method of claim 19, wherein if a corresponding channel state is classified as 'BAD', the corresponding data symbol is determined to have been erased and the data is stored.
23. The method of claim 19, wherein if a corresponding channel state is classified as 'GOOD', the data is demodulated according to a demodulation method and then stored.
24. The method of claim 19, wherein the demodulating stores symbols in a packet.

25. A method of controlling transmission in a wireless system comprising:
determining if a channel is in a 'GOOD' state or a 'BAD' state based on channel gains; and
correcting for the 'BAD' state if the channel is determined to be in the 'BAD' state.
26. The method of claim 25, wherein correcting for the 'BAD' state comprises changing transmission power of the channel.
27. The method of claim 25, wherein correcting for the 'BAD' state comprises performing decoding according to an erasure-error correction technique.
28. An apparatus for use in a wireless system comprising:
a first device to send and receive wireless data; and
a second device to determine if a channel is in a 'GOOD' state or a 'BAD' state based on channel gains and to correct for the 'BAD' state if the channel is determined to be in the 'BAD' state.
29. The apparatus of claim 28, wherein the second device corrects for the 'BAD' state by changing transmission power of the channel.

30. The apparatus of claim 28, wherein the second device corrects for the 'BAD' state by performing decoding according to an erasure-error correction technique.